When the librarian was the search engine: introduction to the special issue on new roles for health sciences librarians

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The librarian in today's medical and health fields lives in a fast-paced and ever-changing environment. Reaching this modern, technology-driven library was a long and difficult road that had many bumps and retreats. Hope was never the issue; keeping pace was the challenge.

The purpose of this introduction to the *Journal of the Medical Library Association* special issue on ''New Roles for Health Sciences Librarians'' is to explore the work and responsibilities of the medical librarian as libraries moved from the manual to the digital environment over a period of seventy years (for a review of more recent developments, see Cooper and Crum in this issue). What the librarian of the 1940s and 1950s did and what the librarian needed to know was outlined by the profession's best practitioners of that time in the first *Handbook of Medical Library Practice* [1], developed by a committee of the Medical Library Association in 1943. The model of the library profession as described in this manual was the traditional one, a model that had been the same for many centuries. And it continued to follow that pattern for the next two decades. Janet Doe, the editor of the *Handbook,* outlined the goal of this seminal work as showing ''those aspects of clientele, physical equipment, literature, methods and bibliographic tools in which the medical library differs from the general library'' [2]. Included were chapters on administration, book and journal selection, cataloging/classification, reference, and history of medicine.

Much of what is described in 1943 is continued in health sciences libraries today. The major differences are the way that information and knowledge are created and delivered and the skills that practicing librarians need.

MAINTENANCE OF THE COLLECTIONS

During this period of the 1940s and 1950s, libraries focused on building and maintaining the collection and offering information services to the library's clientele. The major difference between medical and general library collections is the need for the medical library to provide more journals than books. Physicians, scientists, and students need the latest information available because they treat patients and carry out laboratory research. Journals provided that up-to-date information, while books gave the essential background reading, with extensive historical coverage and extensive bibliographies.

ACQUISITIONS

To build an adequate collection, librarians needed to know the prominent authors and publishers as well as journal agents and book dealers. Bertha B. Hallam provided a variety of sources for identifying and locating new book and journal titles. Keeping abreast of the best new publications was essential if the library was to serve its users well. Acquisitions librarians had to take note of book reviews in prominent journals and consult the lists provided by the American Medical Association (AMA), the American College of Surgeons, the *Quarterly Cumulative Index Medicus,* and journals such as the *Journal of the American Medical Association* [3]. Often librarians included physicians, nurses, and sometimes students in their library committees to learn about their interests in and needs for the literature.

CLASSIFICATION

Classification of the library's collection is designed to assist readers in finding like subjects together. Many medical libraries used either the Dewey Decimal or the Library of Congress (LC) classifications. Neither was designed for a collection devoted to the particular areas of medicine and health and was not always adequate for medical catalogs.

There were many other class schemes specifically created for medicine, such as the Boston Medical Library, the Cunningham, or the New York Academy of Medicine schedules. The *Handbook* devoted many pages to the schemes. In the mid-1940s, the Army Medical Library (AML) scheme was made available and was used until the National Library of Medicine (NLM) and the LC blended and designated the class letters QS–QZ for preclinical sciences and W–WZ for medicine. Medical libraries in academic institutions often chose LC because it contained both class schemes. The LC and the AML cooperated to produce catalog cards for medical libraries prepared by the AML. The cards, with subject headings and class notations from both, were available from 1946 to 1965 and were frequently purchased by small libraries [4].

CATALOGING

Thorough and accurate cataloging is vital to the library in making access to its collection both easy and clear. The only way to identify needed books and journals was through the catalog, and it became the key to the collection. The card catalog was the essential guide for readers as it provided the authors, titles, and much needed subject headings. That three-inch-by-five-inch card had to capture the vital information necessary for successful use by readers. Each library had to create its own catalog, and the catalogers determined the extent of detail to include. Library of Congress–printed cards were available, as

were catalogs produced by individual libraries, but many libraries did their own cataloging and card typing to speed access to new materials. The routines of typing and filing catalog cards were tedious and boring and, of course, had to be perfectly accurate.

Cataloging itself was not boring. Delving into the rich literature of medicine and science was rewarding work, and librarians who cataloged became knowledgeable about the collection, its strengths, and its weaknesses. Many library school students perceived cataloging as being isolated and uninteresting, but the individuals who chose this role found it stimulating and delighted in the hours spent with medicine's best authors and writers. The position of cataloger was highly regarded, often considered the intellectual basis of librarianship.

Readers were often confused by classification schemes and even more so with subject headings. A list of headings had to be consistent, with no duplication. To compile such an adequate list required skill and understanding. Catalogers followed a manual filled with rules. A book had to be identified with the narrowest subject that was contained in it, with subheadings added to further limit the topic. An authority file was needed to ensure that subjects were consistent.

The second edition of the *Quarterly Cumulative Index Medicus Subject Headings and Cross References* was published in 1940, and that became the standard until the Medical Subject Headings (MeSH) list was developed at NLM and made available in 1960 [5].

Because of the need for currency in medical information, serials were the most important publications in the medical library. Since 1665, when the *Philosophical Transactions of the Royal Society of London* began publication, the journal has filled the need for up-to-date information. Serials cataloging had special problems, for both readers and librarians. A book is complete in a volume or many volumes. Journals change titles, change titles to abbreviations such as *JAMA,* and add special numbers and supplements. The catalog record must include the changes so that all individual pieces of a title are known.

History of medicine collections provided many challenges to catalogers. Many were in foreign languages, including Latin and Greek. A description of the rare book noted the binding, complete collation, notes concerning the text, illustrations, errors, missing pages, and provenance. Whatever might be of use and interest to the scholar or historian would be included. Special collections were not limited to books and journals. Catalogers had a wide range of materials including pamphlets, broadsides, ephemera, maps, objects, illustrations, manuscripts, dissertations, stamps, coins, oral histories, catalogs of drugs and instruments, and microfilms [6].

Creating a library and maintaining the collections was demanding work. All of the tasks were organized and carried out by librarians and their assistants. To do this well required years of experience and a dedication to learning and understanding the subjects and the techniques required to translate the information to the users.

REFERENCE

In the second edition of the *Handbook,* Eileen R. Cunningham and Mary E. Grinnell declare that ''reference service is the heart and soul, not only of the library but in many ways of the whole organization which it serves. The efficiency of this service is the yardstick by which the library's achievement is measured'' [7]. The success of the library in large part depended upon the knowledge and ability of the library director and the qualifications of the professional staff.

Reference work required that the librarian be concerned for all of the institution's clientele. The individuals included busy physicians and scientists; medical, nursing, and allied health students; undergraduate students in the sciences; administrators; and often patients and the public. Handling this range of individuals required knowledge of the levels of information and skills needed by the varied clientele. Because medical information concerns the health, diagnosis, and treatment of patients, the librarian cannot afford to give incomplete or inaccurate information.

Bibliographies formed the basis of reference service. Subject or author searching was time consuming. To make certain that the book or journal article answered the question, it was often necessary for the librarian to read the publication. That process was the best education for reference librarians, for it developed their knowledge of medicine. The bibliographies were searched in detail, and librarians had to become skilled in searching *Index Medicus,* the *Index Catalogue of the Library of the Surgeon General's Office, Biological Abstracts, Psychological Abstracts,* the *Cumulative Index to Nursing and Allied Health Literature (CINAHL),* and a variety of foreign language indexes. In addition to having thorough knowledge of the organization and coverage of indexes, abstracts, and reference books, the librarian had to review each to know what kind of question each would answer. Judith Wallen Hunt stated that ''some libraries set aside from four to six hours per week for professional reading on library time for certain of its staff members'' [8].

Policies were established so that all staff members knew the type and depth of assistance to be provided to each category of user. Finding answers was only a part of the job. Much effort was devoted to teaching users how to locate materials in the reference tools and to understand the differences between various sources. Teaching students was a major part of the reference responsibility. Many medical and nursing classes provided time for librarians to teach how to search the print bibliographies, how to read books and articles critically, and how to find and use the library's resources, including librarians.

Reference librarians often provided tours of the library to acquaint students, new faculty, and staff with the organization of the library, the location of the catalog, and major tools. Tours included discussion of the circulation and interlibrary loan (ILL) services, in addition to explanation of the responsibilities of the

reference staff. Included could be help with papers, theses, presentations for rounds, compilation of bibliographies, and seminars. Reference librarians were often called upon to explain the principles of copyright or the issues concerning plagiarism.

If the medical library was part of an institution's library system, it was important for reference staff to understand the quality of the other institutional libraries as well as other libraries in the region that held special collections of note. Reference librarians learned every day, and the accumulated knowledge, acquired over years of reading and practice, served their clientele well. The work of librarians was important to the institution and satisfying and challenging to the librarian.

ADVANCES IN AUTOMATION

As early as the 1930s, scientists were interested in using automated systems to simplify many tasks. Librarians hoped that new technologies would find ways to simplify manual routine tasks in the library. Automated processes could save staff time and standardize procedures. Some examples of these new products and machines follow.

In 1960, the Xerox 914 photocopier became available. This automated xerographic machine made lasting changes in using and duplicating information [9]. Those fortunate enough to have a 914 could do away with the mimeograph and onion skin–typed copies. Readers rejoiced in being able to copy an article rather than having to read it and take notes in the library. Many copies could be made in minutes, and library users flocked to the machine. At five or ten cents a copy, it proved a money-maker for the library.

The next year, 1961, the Medical Library Center of New York began its service as a cooperative center for acquisitions and storage of medical library materials. It was one of a number of such organizations that focused on sharing journals and conserving space in the member libraries. One of the goals of these cooperative ventures was the establishment of a Union Catalog of Medical Periodicals [10]. Creation of union lists of serials was a major step forward in the ability of librarians to know the holdings of other libraries. Before automation, it was difficult to know where a needed title was held. The PHILSOM system for automated serials control, run by the Washington University School of Medicine Library starting in 1963, was another major step forward in using the computer to foster networks and cooperative ventures [11].

In 1960, specifications for a computer system, the Medical Literature and Analysis and Retrieval System (MEDLARS), was designed for NLM. Extensive details of how the system was developed are outlined in *A History of the National Library of Medicine* [12]. In addition to producing *Index Medicus,* MEDLARS offered a ''search on demand'' service in 1964 to researchers through their medical libraries. Extensive bibliographies were processed and sent to requesters.

In 1965, the Congress passed the Medical Library Assistance Act that provided support for library buildings and collections, the establishment of the Regional Medical Libraries, and more. Creative librarians were excited about the new avenues of support as well as the news that help in addressing the flood of publishing that began after World War II was underway. The capabilities promised by the new technologies pointed the way to solving many problems [13].

The work of ILL staff was facilitated by use of the teletypewriter (TWX). This machine, originally designed to send stock prices, utilized telephone lines and microwaves to transmit the image of the printed page. This greatly increased the speed of ILL requests by eliminating the typing of the ILL form and mailing of the request. Requests could be filled in a matter of hours rather than days [14].

Frederick G. Kilgore moved to advance the use of computers for cataloging with the Columbia–Harvard–Yale Medical Library Computerization Project. This program utilized punched cards to form decklets; fifteen punched cards were produced for each worksheet containing a catalog record. The decklets were fed through an IBM 870 Document Writer connected to a keypunch. The punched cards activated the keys on a typewriter. Catalog card sets were produced in this manner. Producing card sets in the library was just the beginning as Kilgore went on to develop OCLC, the international database of library holdings that changed the role of catalogers forever [15].

THE ONLINE REVOLUTION

All of the developments in library procedures were utilized by librarians who appreciated the efficiency of the automated programs because they resulted in benefits to the users. The online revolution brought a new and astounding capability for information discovery with the first online information retrieval service for biomedical literature, the State University of New York (SUNY) Biomedical Communication Network (BCN), which became operational in October 1968. Those who were in the original nine BCN libraries that exciting day will never forget the sight of bibliographies pouring from the IBM 2740 communication terminal. The database included records from the catalogs of three SUNY medical libraries, five years of MEDLARS, and the SUNY list of serials [16].

The BCN was developed by Irwin H. Pizer with the cooperation of NLM and with financial support from SUNY. Pizer planned to provide a total reference system. In addition to the indexed book chapters and *Index Medicus,* an ILL module to acquire materials would be included. His plan reflected the one created by John Shaw Billings more than one hundred years earlier, when he created the *Index Catalogue of the Library of the Surgeon General's Office* [17].

Compiling bibliographies by hand from indexes and abstracts took hours of time and required much reading. To put a combination of subjects into the computer and receive a printout in a matter of minutes was nothing short of miraculous. It was the beginning of a change in both the perceptions of the librarian's ability of the library's users and the librarians themselves.

There were no manuals or user groups on that beginning date, but librarians communicated with

colleagues, sharing useful information. The need for training and guides on how to search effectively became a part of every meeting. There was no stopping the demand for more databases, more training courses, and more search innovation. This new capability gave added stature to the librarian who could produce bibliographies on demand, enhancing the work of the library's users [18].

During the ensuing years, librarians have participated in many advances and changes as the profession moved from the manual to the digital environment. The ability to navigate the digital information world earned new respect for the librarian who could demonstrate and teach to users the use and value of online searching. For a period of time, it was only the librarian who could offer this new tool.

By the time that the third edition of the *Handbook* was published in 1970, much of the content was centered on use of the new technologies and the education required for librarians. Bernice Hetzner's chapter on the medical librarian suggested that ''undergraduate courses in analytical geometry, calculus, logic, semantics, rhetoric, and the theory of the learning process'' were essential for students intending to go on to library schools. Graduate education would include library school, a second master's degree, or a doctoral degree in information science [19].

The traditional librarian of the past, the individual who studied each reference book and spent hours with indexes and abstracts, was not the librarian of the future, and by 1970, most practitioners were heavily involved in performing the new tasks and in learning new skills. It was the traditional librarian who had the knowledge and the drive and energy to take on this new challenge who has become the librarian of today. This individual may be involved in informatics, data mining, teaching of courses, and publication in a variety of formats. A constant in librarianship is the ability to move and adapt with the changes in medicine, science, and the environment.

Estelle Brodman wrote in 1957, ''the fundamental role of the medical librarian has not changed in the half-century we are examining. The medical librarian has always been, and continues to be, the mediator between the physician and the medical literature. What has changed over the years, however, is the emphasis placed on one or another phase of this mediation, and, to some extent, the concept of how each phase should be carried out'' [20].

The roles of the librarian will continue to evolve and change as our institutions and practices change to support the needs of our faculty, staff, researchers, and students, but the librarian will continue to be the intellectual engine that makes it so. What will not change is that the fundamental role of the librarian is to seek and discover knowledge and in whatever ways possible to provide that knowledge to others.

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